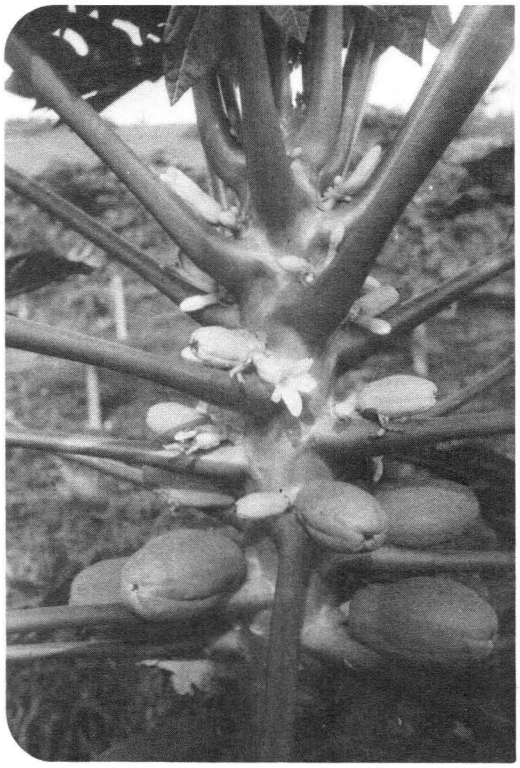
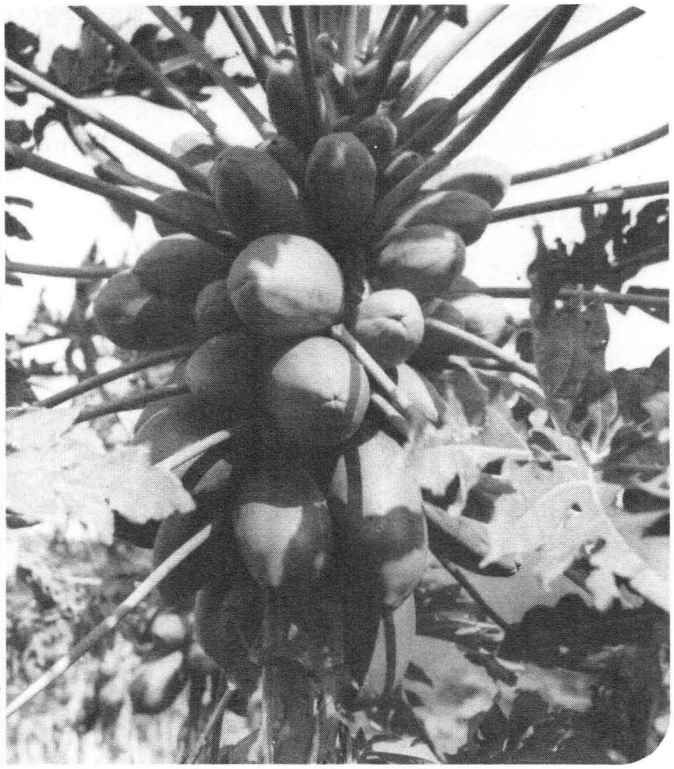
Effect of TV Promotion on Development of the Papaya Market on the Mainland

A Pilot Experiment

P.V. Garrod and W. Miklius





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In the last ten years, papaya acreage and production in Hawaii have nearly doubled. During the same period, the local market for papaya has become pretty much saturated. It has been estimated that the average consumption of papayas per family amounts to 95 pounds per annum (Spielmann and Souza, 1973). Therefore, the development of Mainland and export markets is essential to assure future growth of the papaya industry.

While several methods could be utilized in the development of a market, the purpose of this study was to investigate the effectiveness of one method--TV promotion. A pilot experiment was proposed to achieve this objective.

DESCRIPTION OF THE EXPERIMENT

Three somewhat similar West Coast cities were selected for the experiment. Phoenix and Portland were designated as test cities, while Sacramento was chosen to serve as a control.

The cooperation of two retail firms operating supermarkets was secured in each city. Each cooperating firm agreed to supply data on the quantity of papayas sold[1/] and retail price by the week for a period of 17 weeks beginning May 4 and ending August 30, the 1975 summer shipping season. The first 4 weeks in May served as a pretest and the last 4 weeks in August as a posttest.

TV promotion in Phoenix was conducted from June 9 to July 6 and in Portland from July 7 to August 3.[2/] In both cities the same 30-second spot commercial supplied by the Papaya Administrative Committee was used, and an attempt was made to attain the same exposure (100 Gross Rating Points, split 50/50 between daytime and late fringe). [3/]

In short, the simple experimental design was as follows:

	Phoenix	Portland	Sacramento
May	0	0	0
June	T	0	0
July	0	T	0
August	0	0	0

1/ Actually the data used in this analysis are for the "disappearance" of papayas rather than sales, including such factors as losses due to spoilage and pilferage. Sales and disappearance are not expected to differ significantly. We will use the term "sales" in the text when referring to "disappearance."

2/ Due to communication error, Portland Station KGW ran the commercial for 4 weeks beginning August 3 rather than July 7. This, however, does not appear to have affected results of the experiment.

3/ A Gross Rating Point is equal to the exposure of one percent of TV's audience to the spot commercial once per week.

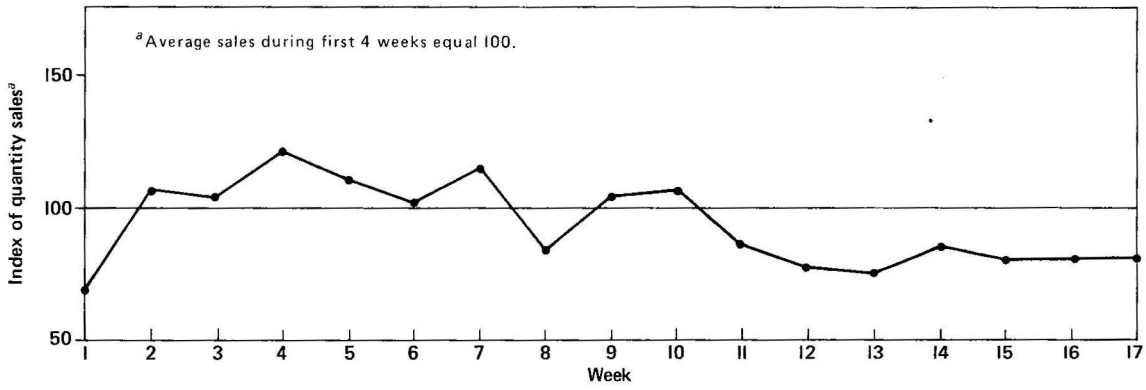

Figure 1. Papaya sales, Sacramento, May-August, 1975.

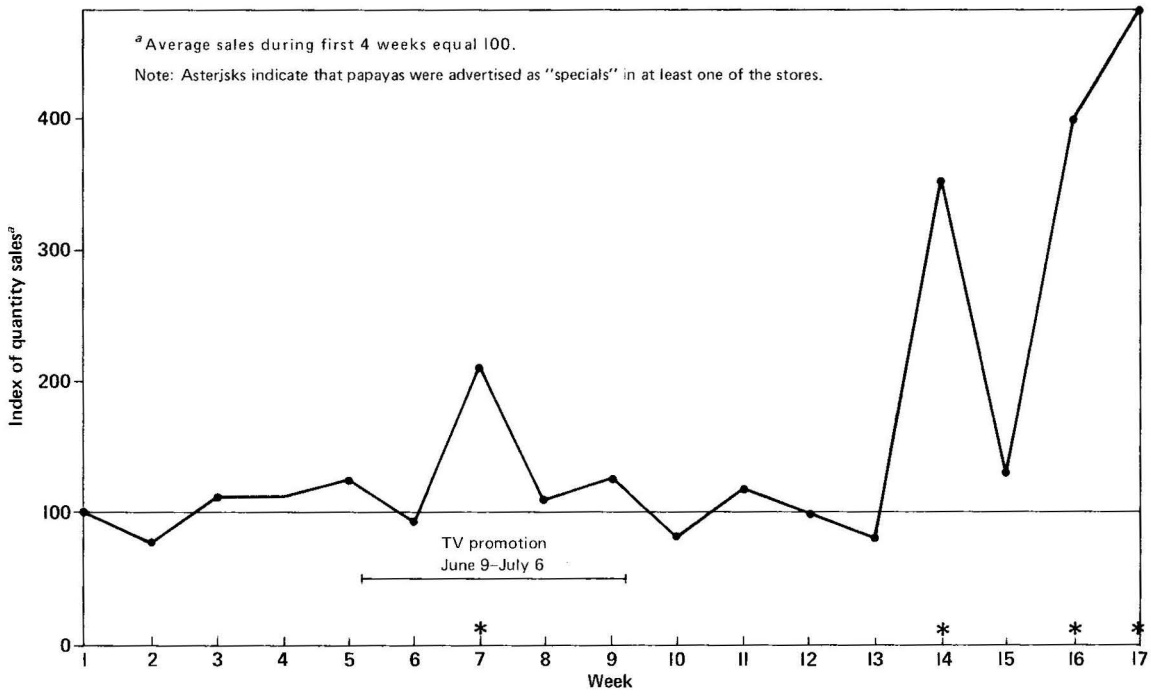

Figure 2. Effect of TV promotion on papaya sales, Phoenix.

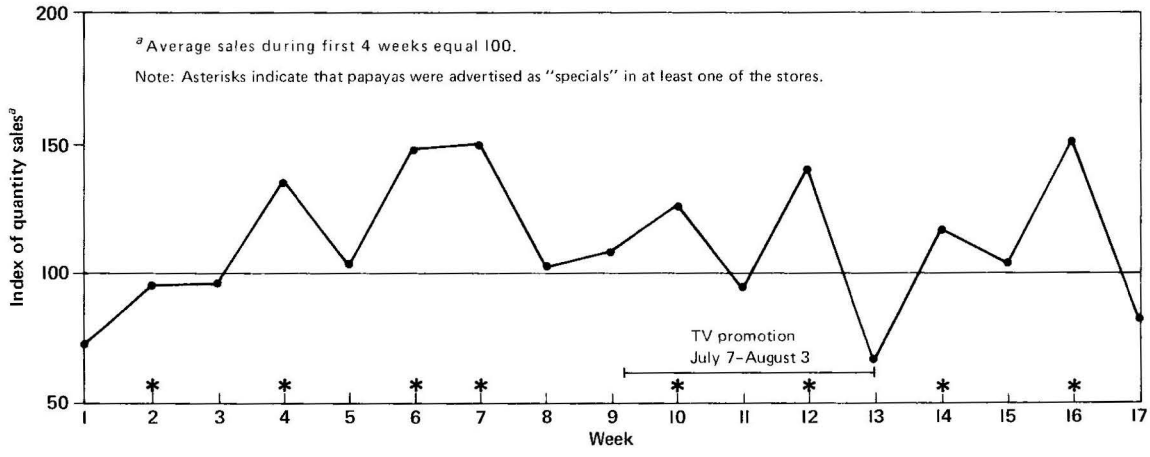

Figure 3. Effect of TV promotion on papaya sales, Portland.

where T designates a month when TV advertising was conducted, and O designates a month without TV advertising. Scheduling of spot commercials and other relevant information describing the advertising campaign are shown in the Appendix.

EMPIRICAL RESULTS

Figures 1, 2, and 3 show the weekly quantity of papaya sold by the supermarkets of two cooperating retail firms in each of the three cities during the period of the experiment. To prevent identification, quantities are shown as an index with average weekly quantity sold during the first 4 weeks of the pretest period serving as the base (= 100). Weeks during which papayas were featured as "specials" are identified by asterisks on the graphs.

The graphs for Phoenix and Portland (Figures 2 and 3) illustrate a strong association between sales and specials. However, as the specials were almost always associated with a price change, simple graphical analysis cannot indicate whether or not the quantity change is associated with the special, the price reduction, or the combined effect of both. It appears, however, that sales did not increase notably in either Phoenix or Portland during or immediately following the weeks of TV promotion.

To investigate effects of TV promotion, price changes, and featuring papayas as specials in store ads separately, the following equation was estimated:

$$QINDEX_{ij} = 667.03 - \underset{(10.31)}{6.60}\ PRINDEX_{ij} + \underset{(0.43)}{7.21}\ TVAD_i + \underset{(1.14)}{18.58}\ STOREAD_{ij} \quad R^{-2} = 0.65 \qquad (1)$$

where

$QINDEX_{ij}$ = seasonally adjusted index of the quantity of papaya sold during week i store j

$PRINDEX_{ij}$ = index of papaya prices during week i store j

$TVAD_i$ = dummy variable taking the value of 1 for weeks when TV promotion was in progress

$STOREAD_{ij}$ = dummy variable taking the value of 1 for weeks when papayas were featured as "specials" in the store ads

The numbers in parentheses are t statistics.

The seasonally adjusted quantity index was obtained by subtracting the average quantity (indexed) sold in Sacramento from the quantity (indexed) in each of the chains in Portland and Phoenix. Sales in Sacramento serve as a good index of seasonality since there were no price changes or papaya promotions in either of the chains during the study period.

The price index for each store is based on the quantity-weighted average price during the first 4 weeks of the pretest period (base = 100).

The statistical results confirm our initial conclusion that TV promotion did not affect the quantity of papayas sold. This conforms with the results of another study of the effect of promotion on "soft" fruits (Curhan, 1974). The only statistically significant variable is the index of prices. It should be noted that the majority of price reductions were combined with the inclusion of papayas in newspaper ads. However, newspaper ads without simultaneous price reduction did not have a significant effect on the quantity of papayas sold.

The statistical results, however, do illustrate the sensitivity of papaya sales to price. A 1 percent decrease in price at the retail level is associated with a 5.4 percent increase in sales and a 4.4 percent increase in total revenue from papaya sales to the store.

EVALUATION OF RESULTS

Several reasons could be suggested to explain why TV promotion in this experiment did not result in a significant increase in the quantity of papayas sold. It is possible that TV promotion of a product such as papaya is not an effective tool of market development.

There are, however, several alternative explanations. First because of the budget constraint, the experiment was limited to a single fixed treatment (i.e., 100 GRP). It is possible that this amount of exposure is not sufficient; there may be some minimum threshold of exposure which must be exceeded to make TV promotion effective.

Second, only one specific 30-second spot commercial was used in the experiment. It is possible that this particular spot commercial was not effective; i.e., a different spot commercial would have produced different results.

Third, partly due to the budget constraint and partly in order to reach the housewife, we concentrated on day and fringe time. It is possible that a prime-time TV advertising campaign would have had a different effect.

Fourth, it is also possible that TV advertising effects are delayed rather than immediate. If this is indeed the case, it would be very difficult to measure the spot commercial's effectiveness. This possibility, however, is not consistent with the findings of a previous study concerned with market development for frozen passion fruit juice. TV promotion was found to have a significant and immediate effect on sales (Scott, 1958).

The results of the experiment allow us to draw only a very weak implication--that a TV promotion campaign limited to 100 GRP is probably not effective in generating additional papaya sales. A more complex experiment allowing for varying degrees of TV exposure, change in prices (with and without accompanying newspaper ads), and several different TV spots would be required to obtain a more definitive answer regarding the effectiveness of TV promotion. Such an experiment would require resources far beyond those available for this study.

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APPENDIX: SCHEDULING

Market: PHOENIX

Period: 6/9/75 - 7/6/75

Announcements per Week: 19

Commercial Length: :30

Household Coverage per Month: 80%

Average Net Households Reached per Month: 2,132,000

Average Household Impressions per Month: 5.0

Product: Papaya

STATION	DAY	TIME	PROGRAM
KTVK	Mon-Fri (2/Wk)	8:30A - 1:30P	IN: ABC Daytime Rotation
	Mon-Fri (2/Wk)	4:30 - 5:30P	IN: Star Trek
	Mon-Sun (1/Wk)	10:00 - 10:30P	IN: News
KPHO	Mon-Fri (3/Wk)	12:30 - 1:00P	IN: Andy Griffith
	Saturday	4:30 - 6:30P	IN: Here Come The Brides
	Mon-Fri (1/Wk)	5:00 - 6:00P	IN: Mod Squad
KTAR	Mon-Fri (2/Wk)	6:00 - 8:00A	IN: Today Show
	Mon-Fri (2/Wk)	3:30 - 4:30P	IN: Dialing for $ Movie
	Sunday	10:30P - 12:00M	IN: Sunday Tonight Show
KOOL	Mon-Fri (2/Wk)	12:30 - 2:30P	IN: CBS Afternoon Rotation
	Mon-Fri (1/Wk)	12:00N - 12:30P	IN: Noon News
	Sunday	4:00 - 5:00P	IN: National Geographic

Market: PORTLAND

Period: 7/7/75 - 8/3/75

Announcements per Week: 16

Commercial Length: :30

Household Coverage per Month: 80%

Average Net Households Reached per Month: 2,760,000

Average Household Impressions per Month: 4.2

Product: Papaya

STATION	DAY	TIME	PROGRAM
KOIN	Mon-Fri (2/Wk)	9:00 - 11:30A	IN: CBS Morning Rotation
	Mon-Fri (1/Wk)	11:30A - 12:30P	IN: Midday News
	Mon-Fri (1/Wk)	4:00 - 5:30P	IN: Merv Griffin
	Sat/Sun (2/Wk)	2:00 - 5:00P	IN: Weekend Movie Combo
KPTV	Mon-Fri (1/Wk)	7:00 - 8:00P	IN: The F.B.I.
	Sunday	1:30 - 3:30P	IN: Sunday Matinee
KATU	Mon-Fri (2/Wk)	11:00A - 3:30P	IN: ABC Daytime Rotation
	Saturday	7:00 - 8:00P	IN: National Geographic
KGW	Mon-Fri (1/Wk)	7:00 - 9:00A	IN: Today Show
	Mon-Fri (1/Wk)	12:00N - 12:30P	IN: Noon News
	Mon-Fri (2/Wk)	12:30 - 4:00P	IN: PM-NBC Afternoon Rotation
	Mon-Fri (1/Wk)	4:00 - 5:30P	IN: Mike Douglas

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Departmental Paper 43—November 1976 (2M)